

RECEIVED

P#20

DEC 21 2000

1645

TECH CENTER 1600/2900

ENTERED

RAW SEQUENCE LISTING DATE: 12/08/2000
 PATENT APPLICATION: US/09/121,587A TIME: 10:20:09

Input Set : A:\06132.033003.SEQLIST.TXT
 Output Set: N:\CRF3\12082000\I121587A.raw

4 <110> APPLICANT: Chambers, Thomas J.
 5 Guirakhoo, Farshad
 6 Monath, Thomas P.
 8 <120> TITLE OF INVENTION: CHIMERIC FLAVIVIRUS VACCINES
 11 <130> FILE REFERENCE: 06132/033003
 13 <140> CURRENT APPLICATION NUMBER: 09/121,587A
 14 <141> CURRENT FILING DATE: 1998-07-23
 16 <150> PRIOR APPLICATION NUMBER: US98/03894
 17 <151> PRIOR FILING DATE: 1998-03-02
 19 <150> PRTOR APPLICATION NUMBER: 09/007,664
 20 <151> PRIOR FILING DATE: 1998-01-15
 22 <150> PRTOR APPLICATION NUMBER: 08/807,445
 23 <151> PRIOR FILING DATE: 1997-02-28
 25 <160> NUMBER OF SEQ ID NOS: 29
 27 <170> SOFTWARE: FastSEQ for Windows Version 4.0
 29 <210> SEQ ID NO: 1
 30 <211> LENGTH: 1983
 31 <212> TYPE: DNA
 32 <213> ORGANISM: Dengue-2 virus
 34 <220> FEATURE:
 35 <221> NAME/KEY: CDS
 36 <222> LOCATION: (1)...(1983)
 38 <400> SEQUENCE: 1
 39 ttc cat cta acc aca cgt aac gga gaa cca cac atg atc gtc agt aga 48
 40 Phe His Leu Thr Thr Arg Asn Gly Glu Pro His Met Ile Val Ser Arg
 41 1 5 10 15
 43 caa gag aaa ggg aaa agt ctt ttg ttt aaa aca gag gat ggc gtg aac 96
 44 Gln Glu Lys Gly Lys Ser Leu Leu Phe Lys Thr Gln Asp Gly Val Asn
 45 20 25 30
 47 atg tgc acc ctc atg gcc atg gac ctt ggt gaa ttg tgt gaa gac aca 144
 48 Met Cys Thr Leu Met Ala Met Asp Leu Gly Glu Leu Cys Glu Asp Thr
 49 35 40 45
 51 atc acg tac aag tgt ccc ctt ctc agg cag aat gag cca gaa gac ata 192
 52 Ile Thr Tyr Lys Cys Pro Leu Leu Arg Gln Asn Glu Pro Glu Asp Ile
 53 50 55 60
 55 gac tgc tgg tgc aac tcc acg tcc acg tgg gta acc tat ggg act tgt 240
 56 Asp Cys Trp Cys Asn Ser Thr Ser Thr Trp Val Thr Tyr Gly Thr Cys
 57 65 70 75 80
 59 acc acc acg gga gaa cat aga aga gaa aaa aga tca gtg gca ctc gtt 288
 60 Thr Thr Thr Gly Glu His Arg Arg Glu Lys Arg Ser Val Ala Leu Val
 61 85 90 95
 63 cca cat gtg gga atg gga ctg gag acg cga act gaa aca tgg atg tca 336
 64 Pro His Val Gly Met Gly Leu Glu Thr Arg Thr Glu Thr Trp Met Ser
 65 100 105 110
 67 tca gaa ggg gct tgg aaa cat gcc cag aga att gaa att tgg atc ctg 384
 68 Ser Glu Gly Ala Trp Lys His Ala Gln Arg Ile Glu Ile Trp Ile Leu
 69 115 120 125

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/121,587A

DATE: 12/08/2000
TIME: 10:20:09

Input Set : A:\06132.033003.SEQLIST.TXT
Output Set: N:\CRF3\12082000\I121587A.raw

71	aga cat cca ggc ttc acc ata atg gca gca atc ctg gca tac acc ata	432
72	Arg His Pro Gly Phe Thr Ile Met Ala Ala Ile Leu Ala Tyr Thr Ile	
73	130 135 140	
75	ggg acg aca cat ttc cag aga gca ctg att ttc atc tta ctg aca gct	480
76	Gly Thr Thr His Phe Gln Arg Ala Leu Ile Phe Ile Leu Leu Thr Ala	
77	145 150 155 160	
79	qtc qct cct tca atg aca atq cgt tgc ata qga ata tca aat aqa gac	528
80	Val Ala Pro Ser Met Thr Met Arg Cys Ile Gly Ile Ser Asn Arg Asp	
81	165 170 175	
83	ttt gta gaa ggg gtt tca gga gga agc tgg gtt gac ata gtc tta gaa	576
84	Phe Val Glu Gly Val Ser Gly Gly Ser Trp Val Asp Ile Val Leu Glu	
85	180 185 190	
87	cat gga ayc tgt gtg acg acg atg gca aaa aac aaa cca aca ttg gat	624
88	His Gly Ser Cys Val Thr Thr Met Ala Lys Asn Lys Pro Thr Leu Asp	
89	195 200 205	
91	ttt gaa ctg ata aaa aca gaa gcc aaa cag cct gcc acc cta agg aag	672
92	Phe Glu Leu Ile Lys Thr Glu Ala Lys Gln Pro Ala Thr Leu Arg Lys	
93	210 215 220	
95	tac tgt ata gag gca aag cta acc aac aca aca aca gaa tct cgt tgc	720
96	Tyr Cys Ile Glu Ala Lys Leu Thr Asn Thr Thr Glu Ser Arg Cys	
97	225 230 235 240	
99	cca aca caa ggg gaa ccc agc cta aat gaa gag cag gat aaa agg ttc	768
100	Pro Thr Gln Gly Glu Pro Ser Leu Asn Glu Glu Gln Asp Lys Arg Phe	
101	245 250 255	
103	qtc tgc aaa cac tcc atg gta gac aqa gqa tgg gga aat gga tgt gga	816
104	Val Cys Lys His Ser Met Val Asp Arg Gly Trp Gly Asn Gly Cys Gly	
105	260 265 270	
107	tta ttt gga aag gqa ggc att gtg acc tgt gct atg ttc aca tgc aaa	864
108	Leu Phe Gly Lys Gly Gly Ile Val Thr Cys Ala Met Phe Thr Cys Lys	
109	275 280 285	
111	aag aac atg gag gga aaa gtt gtg cag cca gaa aac ttg gaa tac acc	912
112	Lys Asn Met Glu Gly Lys Val Val Gin Pro Glu Asn Leu Glu Tyr Thr	
113	290 295 300	
115	att gtg gta aca ccc cac tca ggg gaa gag cat gcg gtc gga aat gac	960
116	Ile Val Val Thr Pro His Ser Gly Glu Glu His Ala Val Gly Asn Asp	
117	305 310 315 320	
119	aca gga aaa cat ggc aag gaa atc aaa gta aca cca cag agt tcc atc	1008
120	Thr Gly Lys His Gly Lys Glu Ile Lys Val Thr Pro Gln Ser Ser Ile	
121	325 330 335	
123	aca gaa gca gaa ttg aca ggt tat ggc act gtc acg atg gag tgc tct	1056
124	Thr Glu Ala Glu Leu Thr Gly Tyr Gly Thr Val Thr Met Glu Cys Ser	
125	340 345 350	
127	ccg aga aca ggc ctc gac ttc aat gag atg gtg ttg ctg cag atg gaa	1104
128	Pro Arg Thr Gly Leu Asp Phe Asn Glu Met Val Leu Leu Gln Met Glu	
129	355 360 365	
131	aat aaa gct tgg ctg gtg cat aggcaa tgg ttc cta gac ctg ccg tta	1152
132	Asn Lys Ala Trp Leu Val His Arg Gln Trp Phe Leu Asp Leu Pro Leu	
133	370 375 380	
135	cca tgg ctg ccc gga ycg gac aca caa ggg tca aat tgg ata caa aaa	1200

RECEIVED

DEC 21 2000

TECH CENTER 1600/2900

RAW SEQUENCE LISTING
PATENT APPLICATION: US/09/121,587A

DATE: 12/08/2000
TIME: 10:20:09

Input Set : A:\06132.033003.SEQLIST.TXT
Output Set: N:\CRF3\12082000\I121587A.raw

136 Pro Trp Leu Pro Gly Ala Asp Thr Gln Gly Ser Asn Trp Ile Gln Lys	
137 385 390 395 400	
139 qaa aca ttg gtc act ttc aaa aat cct cat gcq aag aaa cag gat gtt	1248
140 Glu Thr Leu Val Thr Phe Lys Asn Pro His Ala Lys Lys Gln Asp Val	
141 405 410 415	
143 gtt gtt tta gga tcc caa gaa ggg gcc atg cac aca gca ctc aca ggg	1296
144 Val Val Leu Gly Ser Gln Glu Gly Ala Met His Thr Ala Leu Thr Gly	
145 420 425 430	
147 gcc aca gaa atc caa atg tca tca gga aac tta ctc ttc aca gga cat	1344
148 Ala Thr Glu Ile Gln Met Ser Ser Gly Asn Leu Leu Phe Thr Gly His	
149 435 440 445	
151 ctc aag tgc agg ctg aga atg gac aag cta caq ctc aaa gga atg tca	1392
152 Leu Lys Cys Arg Leu Arg Met Asp Lys Leu Gln Leu Lys Gly Met Ser	
153 450 455 460	
155 tac tct atg tgc aca gga aag ttt aaa gtt gtg aag gaa ata qca gaa	1440
156 Tyr Ser Met Cys Thr Gly Lys Phe Lys Val Val Lys Glu Ile Ala Glu	
157 465 470 475 480	
159 aca caa cat gga aca ata gtt atc agg gtg cag tat gaa ggg gac ggc	1488
160 Thr Gln His Gly Thr Ile Val Ile Arg Val Gln Tyr Glu Gly Asp Gly	
161 485 490 495	
163 tct cca tgt aaa atc cct ttt gag ata atg gat ttg gaa aaa aqa cat	1536
164 Ser Pro Cys Lys Ile Pro Phe Glu Ile Met Asp Leu Glu Lys Arg His	
165 500 505 510	
167 gtc tta ggt cgc ctg atc aca gtc aac cca att gtg aca gaa aaa gat	1584
168 Val Leu Gly Arg Leu Ile Thr Val Asn Pro Ile Val Thr Glu Lys Asp	
169 515 520 525	
171 agc cca gtc aac ata gaa gca gaa cct cca ttc gga gac agc tac atc	1632
172 Ser Pro Val Asn Ile Glu Ala Glu Pro Pro Phe Gly Asp Ser Tyr Ile	
173 530 535 540	
175 atc ata gga gta gag ccg gga caa ctg aag ctc aac tgg ttt aag aaa	1680
176 Ile Ile Gly Val Glu Pro Gly Gin Leu Lys Leu Asn Trp Phe Lys Lys	
177 545 550 555 560	
179 gga agt tct atc ggc caa atg ttt gag aca aca atg agg ggg gcg aag	1728
180 Gly Ser Ser Ile Gly Gln Met Phe Glu Thr Thr Met Arg Gly Ala Lys	
181 565 570 575	
183 aga atg gcc att ttg ggt gac aca gcc tgg gat ttt gga tcc ctg gga	1776
184 Arg Met Ala Ile Leu Gly Asp Thr Ala Trp Asp Phe Gly Ser Leu Gly	
185 580 585 590	
187 gga gtg ttt aca tct ata gga aaa gcc ctc cac caa gtc ttt gga gca	1824
188 Gly Val Phe Thr Ser Ile Gly Lys Ala Leu His Gln Val Phe Gly Ala	
189 595 600 605	
191 atc tat gga gct gcc ttc agt ggg gtc tca tgg act atg aaa atc ctc	1872
192 Ile Tyr Gly Ala Ala Phe Ser Gly Val Ser Trp Thr Met Lys Ile Leu	
193 610 615 620	
195 ata gga gtc att atc aca tgg ata gga atg aat tca cgc agc acc tca	1920
196 Ile Gly Val Ile Ile Thr Trp Ile Gly Met Asn Ser Arg Ser Thr Ser	
197 625 630 635 640	
199 ctg tct gtg tca cta gta ttg gtg gga gtc gtg acg ctg tat ttg gga	1968
200 Leu Ser Val Ser Leu Val Leu Gly Val Val Thr Leu Tyr Leu Gly	

RECEIVED

DEC 21 2000

TECH CENTER 1600/2000

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/121,587A DATE: 12/08/2000
 TIME: 10:20:09

Input Set : A:\06132.033003.SEQLIST.TXT
 Output Set: N:\CRF3\12082000\I121587A.raw

201	645	650	655
203	gtt atg gtg ggc gcc		
204	Val Met Val Gly Ala		1983
205	660		
208	<210> SEQ ID NO: 2		
209	<211> LENGTH: 661		
210	<212> TYPE: PRT		
211	<213> ORGANISM: Dengue-2 virus		
213	<400> SEQUENCE: 2		
214	Phe His Leu Thr Thr Arg Asn Gly Glu Pro His Met Ile Val Ser Arg		
215	1 5 10 15		
216	Gln Glu Lys Gly Lys Ser Leu Leu Phe Lys Thr Glu Asp Gly Val Asn		
217	20 25 30		
218	Met Cys Thr Leu Met Ala Met Asp Leu Gly Glu Leu Cys Glu Asp Thr		
219	35 40 45		
220	Ile Thr Tyr Lys Cys Pro Leu Leu Arg Gln Asn Glu Pro Glu Asp Ile		
221	50 55 60		
222	Asp Cys Trp Cys Asn Ser Thr Ser Thr Trp Val Thr Tyr Gly Thr Cys		
223	65 70 75 80		
224	Thr Thr Thr Gly Glu His Arg Arg Glu Lys Arg Ser Val Ala Leu Val		
225	85 90 95		
226	Pro His Val Gly Met Gly Leu Glu Thr Arg Thr Glu Thr Trp Met Ser		
227	100 105 110		
228	Ser Glu Gly Ala Trp Lys His Ala Gln Arg Ile Glu Ile Trp Ile Leu		
229	115 120 125		
230	Arg His Pro Gly Phe Thr Ile Met Ala Ala Ile Leu Ala Tyr Thr Ile		
231	130 135 140		
232	Gly Thr Thr His Phe Gln Arg Ala Leu Ile Phe Ile Leu Leu Thr Ala		
233	145 150 155 160		
234	Val Ala Pro Ser Met Thr Met Arg Cys Ile Gly Ile Ser Asn Arg Asp		
235	165 170 175		
236	Phe Val Glu Gly Val Ser Gly Gly Ser Trp Val Asp Ile Val Leu Glu		
237	180 185 190		
238	His Gly Ser Cys Val Thr Thr Met Ala Lys Asn Lys Pro Thr Leu Asp		
239	195 200 205		
240	Phe Glu Leu Ile Lys Thr Glu Ala Lys Gln Pro Ala Thr Leu Arg Lys		
241	210 215 220		
242	Tyr Cys Ile Glu Ala Lys Leu Thr Asn Thr Thr Glu Ser Arg Cys		
243	225 230 235 240		
244	Pro Thr Gln Gly Glu Pro Ser Leu Asn Glu Glu Gln Asp Lys Arg Phe		
245	245 250 255		
246	Val Cys Lys His Ser Met Val Asp Arg Gly Trp Gly Asn Gly Cys Gly		
247	260 265 270		
248	Leu Phe Gly Lys Gly Gly Ile Val Thr Cys Ala Met Phe Thr Cys Lys		
249	275 280 285		
250	Lys Asn Met Glu Gly Lys Val Val Gln Pro Glu Asn Leu Glu Tyr Thr		
251	290 295 300		
252	Ile Val Val Thr Pro His Ser Gly Glu Glu His Ala Val Gly Asn Asp		
253	305 310 315 320		

RAW SEQUENCE LISTING
 PATENT APPLICATION: US/09/121,587A

DATE: 12/08/2000
 TIME: 10:20:09

Input Set : A:\06132.033003.SEQLIST.TXT
 Output Set: N:\CRF3\12082000\I121587A.raw

254 Thr Gly Lys His Gly Lys Glu Ile Lys Val Thr Pro Gln Ser Ser Ile
 255 325 330 335
 256 Thr Glu Ala Glu Leu Thr Gly Tyr Gly Thr Val Thr Met Glu Cys Ser
 257 340 345 350
 258 Pro Arg Thr Gly Leu Asp Phe Asn Glu Met Val Leu Leu Gln Met Glu
 259 355 360 365
 260 Asn Lys Ala Trp Leu Val His Arg Gln Trp Phe Leu Asp Leu Pro Leu
 261 370 375 380
 262 Pro Trp Leu Pro Gly Ala Asp Thr Gln Gly Ser Asn Trp Ile Gln Lys
 263 385 390 395 400
 264 Glu Thr Leu Val Thr Phe Lys Asn Pro His Ala Lys Lys Gln Asp Val
 265 405 410 415
 266 Val Val Leu Gly Ser Gln Glu Gly Ala Met His Thr Ala Leu Thr Gly
 267 420 425 430
 268 Ala Thr Glu Ile Gln Met Ser Ser Gly Asn Leu Leu Phe Thr Gly His
 269 435 440 445
 270 Leu Lys Cys Arg Leu Arg Met Asp Lys Leu Gln Leu Lys Gly Met Ser
 271 450 455 460
 272 Tyr Ser Met Cys Thr Gly Lys Phe Lys Val Val Lys Glu Ile Ala Glu
 273 465 470 475 480
 274 Thr Gln His Gly Thr Ile Val Ile Arg Val Gln Tyr Glu Gly Asp Gly
 275 485 490 495
 276 Ser Pro Cys Lys Ile Pro Phe Glu Ile Met Asp Leu Glu Lys Arg His
 277 500 505 510
 278 Val Leu Gly Arg Leu Ile Thr Val Asn Pro Ile Val Thc Glu Lys Asp
 279 515 520 525
 280 Ser Pro Val Asn Ile Glu Ala Glu Pro Pro Phe Gly Asp Ser Tyr Ile
 281 530 535 540
 282 Ile Ile Gly Val Glu Pro Gly Gln Leu Lys Leu Asn Trp Phe Lys Lys
 283 545 550 555 560
 284 Gly Ser Ser Ile Gly Gln Met Phe Glu Thr Thr Met Arg Gly Ala Lys
 285 565 570 575
 286 Arg Met Ala Ile Leu Gly Asp Thr Ala Trp Asp Phe Gly Ser Leu Gly
 287 580 585 590
 288 Gly Val Phe Thr Ser Ile Gly Lys Ala Leu His Gln Val Phe Gly Ala
 289 595 600 605
 290 Ile Tyr Gly Ala Ala Phe Ser Gly Val Ser Trp Thr Met Lys Ile Leu
 291 610 615 620
 292 Ile Gly Val Ile Ile Thr Trp Ile Gly Met Asn Ser Arg Ser Thr Ser
 293 625 630 635 640
 294 Leu Ser Val Ser Leu Val Leu Val Gly Val Val Thr Leu Tyr Leu Gly
 295 645 650 655
 296 Val Met Val Gly Ala
 297 660
 300 <210> SEQ ID NO: 3
 301 <211> LENGTH: 7
 302 <212> TYPE: PRT
 303 <213> ORGANISM: Japanese Encephalitis virus
 305 <400> SEQUENCE: 3

VERIFICATION SUMMARY
PATENT APPLICATION: US/09/121,587A
DATE: 12/08/2000
TIME: 10:20:10
Input Set : A:\06132.033003.SEQLIST.TXT
Output Set: N:\CRF3\12082000\I121587A.raw